TIERRA SOLUTIONS, INC.

July 2, 2012

Transmitted via Electronic Mail

U.S. Environmental Protection Agency, Region II
Emergency and Remedial Response Division
290 Broadway, 19th Floor
New York, NY 10007-1866

Attention: Ms. Alice Yeh
Remedial Project Manager

Re: Combined Sewer Overflow (CSO)/Stormwater Outfall (SWO) Particulate Organic Carbon (POC) Initial and Follow-up Pre-Program Performance Evaluation (PE) Studies Report

Dear Ms. Yeh:

Tierra Solutions, Inc. (Tierra) [funding and performing, on behalf of Occidental Chemical Corporation], hereby submits to USEPA, one copy [electronic] of the document listed above. The report documents the initial non-conforming analysis of the POC PE by the TestAmerica laboratory located in Burlington, Vermont in November 2011, corrective actions agreed upon by Tierra and USEPA, and conforming results obtained by the laboratory after implementation of corrective actions in May 2012. The laboratory standard operating procedure as modified to include the agreed upon corrective action is provided in the in the CSO/SWO, Quality Assurance Project Plan Addendum, June 2012. The effectiveness of the corrective action has been demonstrated and therefore will be used for the analysis of low solids mass samples for POC during Phase I of the CSO/SWO Investigation. No further action is required.

If you have any questions regarding the enclosed documents please feel free to contact me at (732) 246-5851.

Sincerely,

Tierra Solutions, Inc.

Paul S. Brzozowski, P.E.
Remediation Manager
On behalf of Occidental Chemical Corporation
(as successor to Diamond Shamrock Chemicals Company)

Enclosures:

Combined Sewer Overflow/Stormwater Outfall Particulate Organic Carbon (POC) Initial and Follow-up Pre-Program Performance Evaluation Studies Report, June 2012

Copy to:
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Combined Sewer Overflow (CSO)/Stormwater Outfall (SWO) Particulate Organic Carbon (POC) Initial and Follow-up Pre-Program Performance Evaluation Studies

Tierra Solutions, Inc.

East Brunswick, NJ

July 2012

CSO/SWO Phase I Pre-Program PE

Particulate Organic Carbon (POC) Study Report

1. INTRODUCTION

As part of the planned project quality control program described in the Combined Sewer Overflow/Storm Water Outfall Investigation Quality Assurance Project Plan Rev. 1, May 2011 (CSO/SWO QAPP), a performance evaluation (PE) study was performed in advance of the implementation of Phase I of the CSO/SWO program. This study, referred to as the Pre-Program PE Study, was conducted to assess the laboratory's ability to produce analytical results within the analytical acceptance limits associated with that PE sample and to identify corrective actions should any be necessary. The PE sample, having a known analyte concentration, was submitted "blind" to the laboratory (without disclosure to the laboratory of the analyte concentration) to support unbiased testing.

The pre-program PE study addressed all analytical procedures planned for use in Phase I of the CSO/SWO program and included analysis of the whole water, high solids mass (HSM) and low solids mass (LSM) sample types. The Particulate Organic Carbon (POC) result obtained for the LSM sample type during the initial pre-program PE study, conducted in November 2011 by TestAmerica, Burlington, Vermont (TestAmerica) laboratory, did not meet established acceptance criteria. As such, corrective actions were identified and implemented by the laboratory. The PE study was repeated, for POC, by TestAmerica, in May 2012. The results of this follow-up analysis (post corrective action) are acceptable. This report provides the details of the initial and follow-up PE studies for POC.

2. POC INITIAL ANALYSIS

The PE sample was a National Institute of Standards and Technology (NIST) certified powder material (NIST #1632d). As part of the program protocol, the sample was suspended in deionized water briefly (less than two minutes) and the resultant water/powder suspension was then analyzed per Standard Operating Procedures (SOPs) L-11/L-22 in the CSO/SWO QAPP. This procedure involved filtering the suspension and then sub-sampling the filter by removing two portions of the filter with a biopsy punch. This sub-sample was then analyzed for Total Organic Carbon (TOC). The result obtained during the initial analysis failed to fall within the acceptance limits (See Table 1 below).

Table 1

POC (LSM) – Solids Initial Analysis (Two Holes Punched)
Analytical Method/SOP Reference: L-11/L-22[a]

Analyte	Acceptance Limits[b] mg/kg	Reported Concentration mg/kg	Pass / Fail
POC	653,480 – 768,800	571,000	Fail

[a] As defined in Worksheet #23-1 of the CSO/SWO QAPP
[b] The acceptance limits are based on the certificate of analysis provided by NIST for the standard reference material.

It is believed that the reason for this failure was not a problem with any particular deficiency within the TestAmerica laboratory but rather with the segment of the method involving sub-sampling with the biopsy punch. The method assumes the even distribu tion of particulates on the filter after filtration. Theoretically, only 0.37mg of the formerly suspended powder material is analyzed via the TOC detector if the particulate is evenly distributed. When dealing with such small units of mass any variation in particulate distribution on the filter will significantly impact the actual amount of material analyzed and thereby cause variability in the results reported.

3. POC FOLLOW-UP (MODIFIED) ANALYSIS

Per a conference call with the USEPA on March 19, 2012 it was agreed that a four hole punch modification would be implemented. The theory being that four sub-samples of the filter would better account for the variance in particulate distribution over the surface of the filter. The same PE sample was analyzed (NIST #1632d) for POC using the revised procedure. The result of this second study is presented in Table 2:

Table 2

POC (LSM) – Solids Modified Analysis (Four Holes Punched)
Analytical Method/SOP Reference: L-11/L-22[a]

Analyte	Acceptance Limits[b] mg/kg	Reported Concentration mg/kg	Pass / Fail
POC	653,480 – 768,800	680,000	Pass

[a] As defined in Worksheet #23-1 of the QAPP Addendum, April 2012
[b] The acceptance limits are based on the certificate of analysis provided by NIST for the standard reference material.

The POC concentration reported by TestAmerica, using the modified procedure was within the established acceptance limits. As a result the four hole punch modification has been recorded in SOP L-22 Rev. 2, QAPP Addendum, April 2012, and TestAmerica, will use this modified procedure for POC analyses during the implementation of Phase I of the CSO/SWO program. No further action is recommended.

Figure A below is a photograph of the filters used in the analysis.

Figure A